## Welcome to the

# 2009 Harbor Lyceums on Economic Development "Gloucester 2020"

## *Gloucester 2020*

What jobs and investments are possible for Gloucester's future economic success?

- Begun in June 2008 with Harbor Listening Posts that defined community values
- Carried forward with endorsed 2009 Harbor Plan
  - Fishing Industry
  - Visitor-based Economy
  - Maritime Economy
- Today: exploring implications for the local economy

## *A lyceum for each of the three existing base industries*

- Maritime Commerce and Industry
  October 8th American Legion
- Visitor-based Economy
  October 15th City Hall
- Fishing Industry
  October 22nd City Hall

**You are invited here tonight to participate**
**In the work in progress**

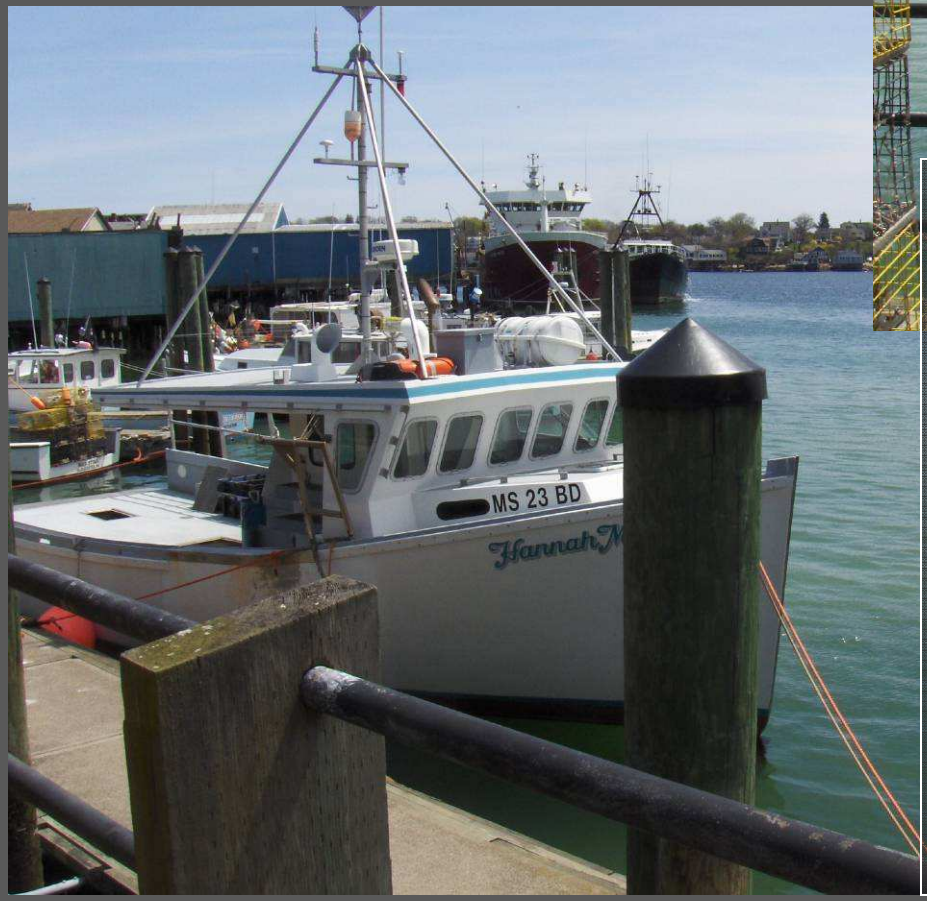
## *Purpose of each lyceum*

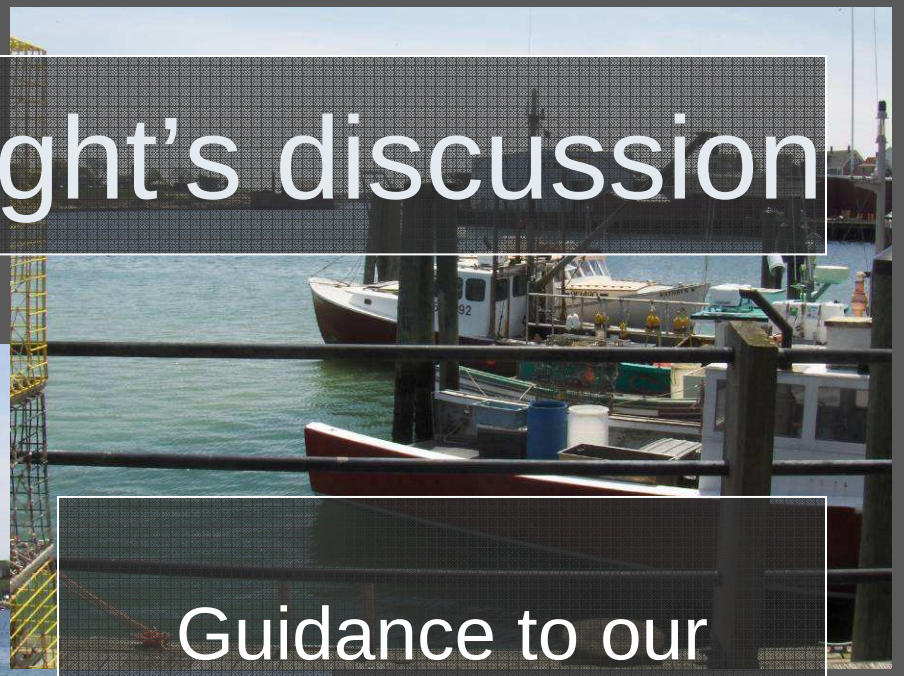
To learn about the development potential of each base industry

To discuss the desirability of industry development relative to criteria established by the community

To brainstorm approaches to promoting desirable forms of development

# Outcome of tonight's discussion



Guidance to our consultants in formulating development and marketing strategies

# Tonight's Agenda

- Presentation of a discussion paper on ***current status and future prospects***
  45 minutes

- Facilitated Group Discussion
  45 minutes

Please welcome

Our Economic Development Consultants

Mt. Auburn Associates:
Peter Kwass & Michael Kane, and
Susan St. Pierre of Vine Associates

# Gloucester's Maritime Economy: Opportunities and Challenges

**October 2009**

# Table of Contents for Tonight's Presentation

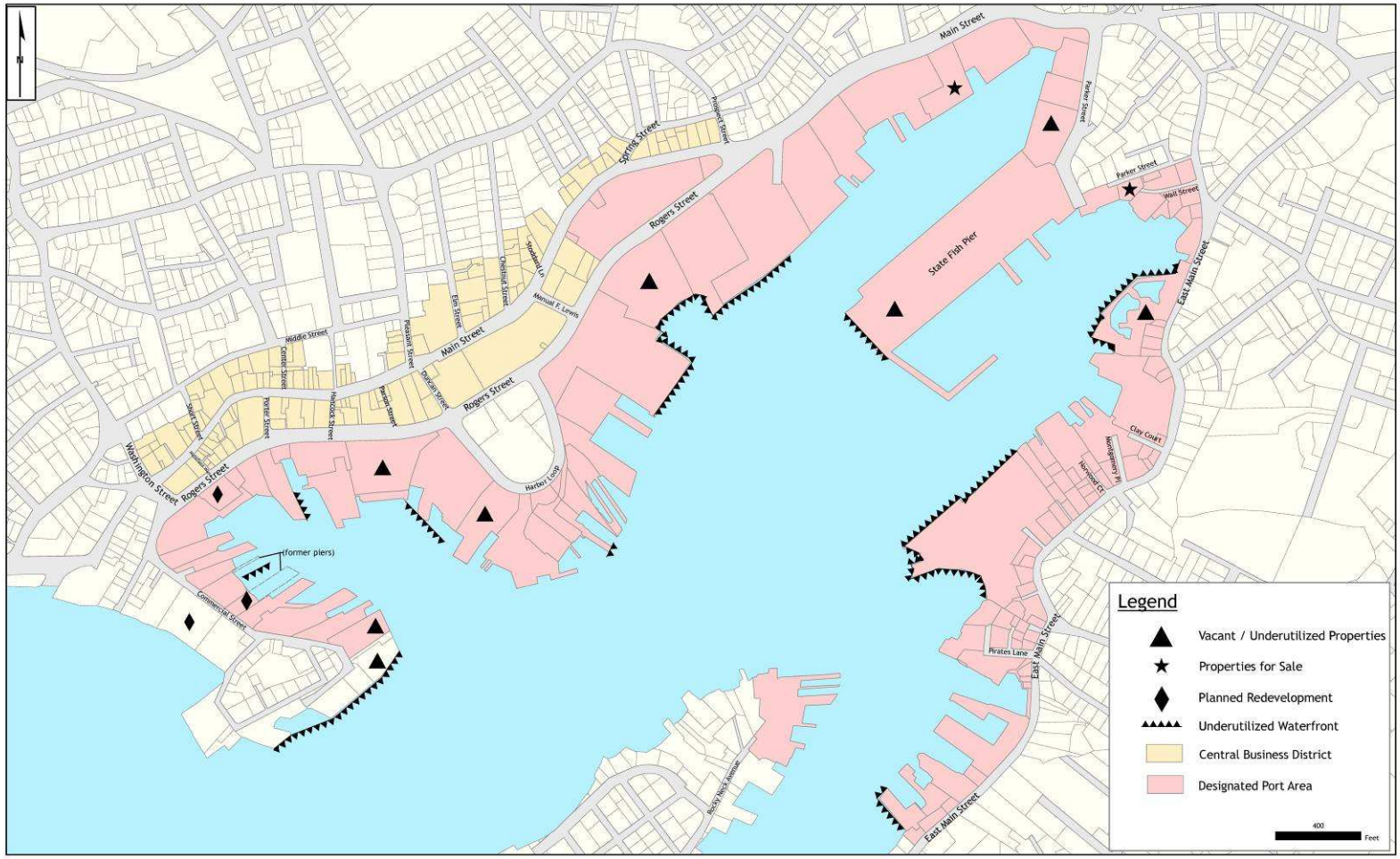
- Overview
- Research
- Education
- Industries
- Small Enterprises
- Discussion Questions

## Objectives

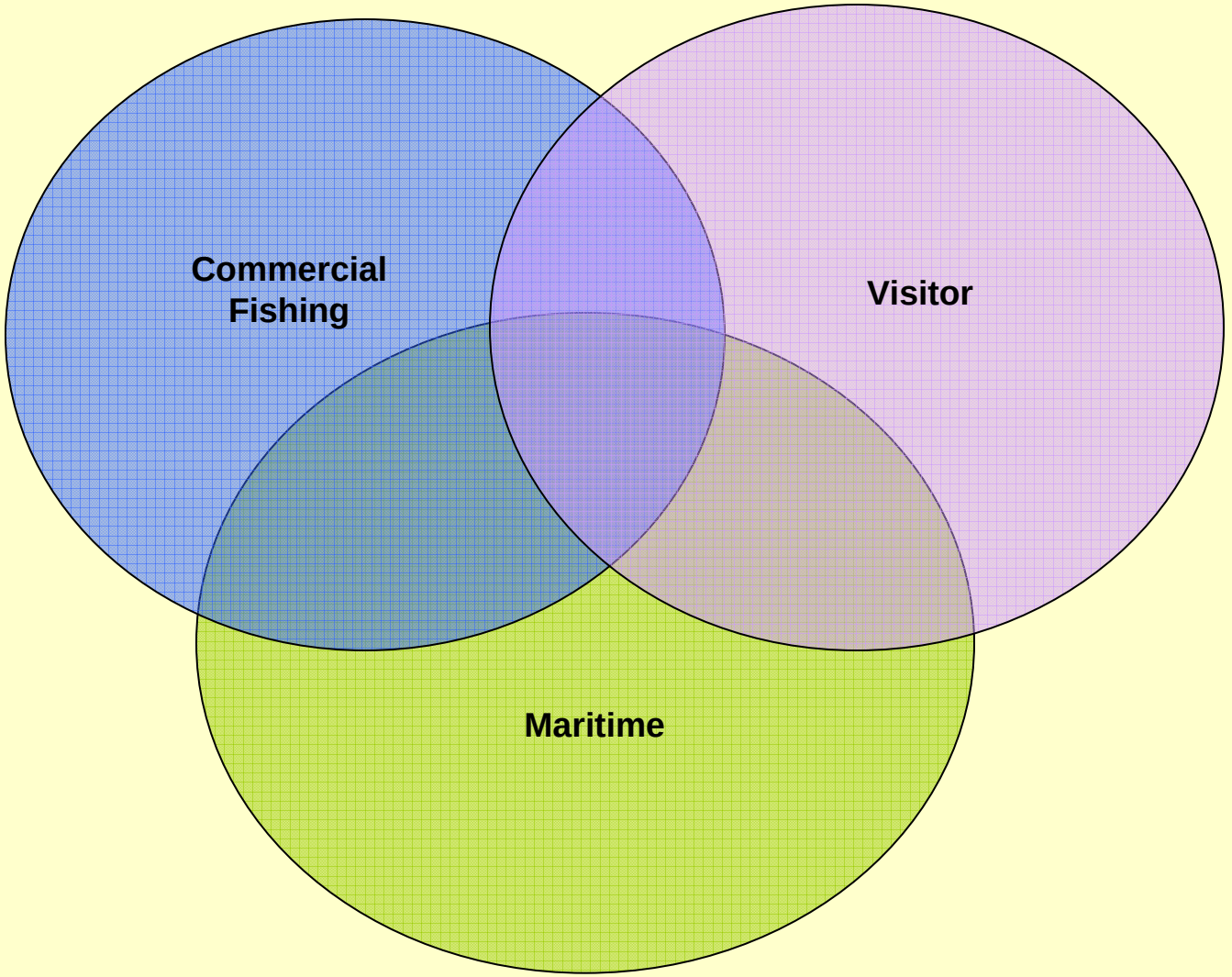
- Identify current and emerging segments
- Identify growth prospects
- Explore opportunities and challenges
- Provide basis for community discussion

# The Study Area

Gloucester Economic Development Plan



# The 3 Legs of the Harbor Economy



# Components of the Maritime Economy

1. Research
2. Education
3. Industry
4. Small Enterprises (DPA supporting uses)

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Overview

Research

Education

Industries

Small Enterprises

Discussion Questions

## Overview

- Benefits of research:
  - Employment (e.g., scientists, research technicians, administrative support, property maintenance).
  - Investment in harbor properties and infrastructure
  - Use of vessels and marine services.
  - Attracts visitors engaged in research and educational activities.
  - Increases the potential of new business formation.

# Overview

- Gloucester's assets:
  - Commercial vessels with experienced captains and crew.
  - Skilled technical labor (e.g., vessel repair).
  - Proximity to the Stellwagen Bank and Gulf of Maine.
  - Presence of small cluster of research organizations.

## Overview

- Types of research:
  - Marine biology — whale, fisheries, marine environmental, and aquaculture research.
  - Marine biotechnology — pharmaceuticals, biofuels, environmental treatments.
  - Marine technology — vessels and equipment for exploration and monitoring; marine energy sources.

# Marine Biology - Whale Research

- Gloucester home to one research center with another planning to relocate here.
  - Whale Center of New England
    - Field research, college and post-college internships, and marine habitat conservation.
  - The Ocean Alliance
    - Acquired buildings for new headquarters.
    - Raising funds for renovation.
    - Field research internship program and CETA program (trains interns for Cape Ann whale watch trips)

# Marine Biology - Fisheries Research

- Cooperative fisheries research between Gloucester fishermen and federally-funded research scientists could increase with additional funding:
  - Most research in Northeast is through the Northeast Fisheries Science Center in Woods Hole.
  - Most research vessels are based in southeast Massachusetts.
  - Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 mandates expansion of cooperative research.
  - More cooperative research will help to bridge gap between researchers and fishermen on fisheries science.
  - Participation by commercial fishermen in research can supplement income.

# Marine Biology - Aquaculture Research

- Aquaculture research expanding — to increase production and ensure safe and sustainable methods.
- NOAA invests in research, education, and outreach through National Sea Grant College Program.
- MIT's Sea Grant Program operates a finfish hatchery at the Gloucester Maritime Heritage Center — planning to upgrade.
- Salem State College's Northeastern Massachusetts Aquaculture Center (NEMAC) -- interest in using UMass' field station at Hodgkins Cove for field research. Harbor is potential alternative location.

# Marine Biology - Environmental Research

- Concerns about threats to marine environment have fueled increasing levels of marine environmental research.
- Red tide research along NE and eastern Canadian coast — multi-institution initiative w/ UMass Marine Sciences and Woods Hole.
  - Gloucester's proximity to the Gulf of Maine could make it convenient base for research cruises and potential site for field laboratory; could involve hiring commercial fishing vessels and crews.
- Proximity to major fisheries could make it a convenient for research on climate change impact on marine environment.

# Marine Biology - Biotechnology Research

- Marine biotechnology -- an emerging field.
- Massachusetts not yet a major research center.
- NOAA's National Sea Grant College Program an important source of support for marine biotechnology research:
  - NOAA Research Office of Ocean Exploration supports "bioprospecting" to search deep-water habitats for marine organisms w/ biotech potential.
  - With proximity to resources of Georges Bank, Gloucester can potentially serve as base for expeditions and field laboratories for analysis of marine microorganisms.

# Marine Biology - Biotechnology Research

- Biofuels research already yielding commercialization opportunities.
- MIT's Sea Grant Program considering Gloucester as location for field experiments in algae energy if resources can be obtained.
- Neptune's Harvest wants to partner with marine biotechnology researchers to develop new products.

## Marine Technology - Research Technology

- New technologies being developed for ocean research and exploration — ships, submersibles, diving technologies, and observation tools.
- MIT Sea Grant Program looking for site in Gloucester Harbor for research on autonomous underwater vehicles and communications equipment.
- May involve hiring local fishing vessels and crews for some of the research.

# Marine Technology - Renewable Energy Research

- Marine-based renewable energy includes ocean, tidal, and offshore wind energy.
- Report of federal Ocean Research and Advisory Panel: "The ocean represents an immense resource for renewable energy."
- High priority for Obama administration -- to reduce carbon emissions and dependence on foreign energy sources; has proposed $2.4 billion for ocean renewable energy in the 2010 DOE budget.
- Electric Power Research Institute identified Massachusetts coast as potential sites for wave and tidal power.

# Marine Technology - Renewable Energy Research

- Gloucester's proximity to Center for Ocean Renewable Energy at UNH, access to ocean and tidal areas, and extensive port infrastructure, may make it desirable site for demonstration projects.
- Significant federal and state investment in offshore wind energy research:
  - Massachusetts State Wind Technology Testing Center in Charlestown:
    - First commercial large blade test facility in the nation.
    - Will help to attract companies to design, manufacture, and test their blades in the United States.

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## Overview

- Working harbor, active commercial fishing industry, and access to key sites for marine research create potential for Gloucester to offer continuum of programs at all levels of marine and maritime education.

# Existing Activities

- Gloucester Harbor has significant cluster of marine educational activities:
  - The Whale Center of New England offers internships for college and post-college students.
  - The Ocean Alliance plans to offer a number of educational programs.
  - The Maritime Heritage Center's Marine Education Center provides programs for 3,000 students from the elementary to high school levels.
  - The SEA Initiative is a multi-year partnership between Gloucester Public Schools, the Gloucester Education Foundation and MIT to enrich curriculum in Science, Technology, Engineering and Mathematics.

# Immediate Opportunities

- Group led by Gloucester residents Lynn Klotz and Joe Rosa have a detailed plan for industry-funded biotechnology education institute -- training at the technician and professional levels.
- North Shore Community College has proposed a Marine Technology Center at the UMass field station at Hodgkin's Cove:
  - Focus on Marine Systems, Electrical Machinery, Communication-Navigation, Marine Trades, and Marine Safety.
  - Partner NSCC faculty and teachers in public schools to develop middle and high school curriculum in marine science and technical training.
  - Offer short-term workforce training programs.
  - Gloucester Harbor may be more desirable location because of closer proximity to marine businesses.

# Longer-term Opportunities

- Schooner Adventure plans to offer educational programming for elementary and secondary students once restoration of craft is complete.
- Faculty at UMass School of Marine Sciences can benefit from waterside field sites for research and education:
  - Identifying opportunities and formulating strategy to develop and fund facilities for a range of researchers would require further discussions.
- Commercial fishing industry representatives have cited need for commercial fishermen's training program.

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- The work of Phil Bolger and Friends, and the potential applications of its advanced hull designs, provide an opportunity for a niche in advanced boat building.
- Opportunities to develop emerging industries in marine research include aquaculture and marine renewable energy.
- Frozen fish processing, fish processing technology, marine equipment, water transportation, and coastal protection and restoration, do not appear to offer opportunities for growth.

# Advanced Boat Building

- Phil Bolger and Friends has new designs with potential to increase fuel efficiency.
  - Department of the Navy's Ship and Force Architecture Concepts Program interested in design of a small-scale patrol craft.
  - Commercial fishing representatives express uncertainty about suitability of design for commercial fishing vessels — may have greater applicability to other types of commercial and recreational vessels.
  - Tourists seek opportunity to observe boat building activities.
  - Small prototype craft could be built at Gloucester Maritime Heritage Center; scale-up would require larger stand-alone facilities
  - Local construction and testing of prototype vessels could lead to commercial production.

# Aquaculture

- U.S. aquaculture industry has strong growth potential:
  - World aquaculture accounted for 47% of the world's fish food supply in 2006.
  - Growth rates in North America have been much lower than in most other regions.
  - U.S. aquaculture industry meets only 5 to 7% of U.S. demand for seafood.
  - U.S. imports over 60% of its seafood, resulting in a trade deficit of more than $7 billion annually.
- Major marine aquaculture species cultivated in New England (in order of 2007 market value): oysters, clams, salmon, tilapia, striped bass, shrimp, and mussels.
- Massachusetts enjoys competitive advantage — access to fresh and marine waters, excellent port and processing facilities, world-class research institutions, a highly educated workforce, and established markets and distribution links.

# Aquaculture

- Jobs in aquaculture range from highly technical to basic and support spin-off and support industries.
- The Massachusetts Office of Coastal Zone Management has developed a state Aquaculture Strategic Plan.
- Aquaculture producers in Gloucester could benefit from collaboration with institutions doing applied aquaculture research in or in close to Gloucester.
- Gloucester provides proximity to markets and infrastructure.
- Aquaculture can provide supplemental income to the commercial fishing industry.

# Alternative Energy

- Free Flow Power, which designs, produces, and installs hydrokinetic turbines in tidal environments, is headquartered in Gloucester Harbor.
  - Has expressed interest in consolidating its manufacturing operations and expanding its corporate offices in Gloucester.
  - Is interested in exploring the application of its technology to tidal environments, including along the Massachusetts coast.
  - Would need to conduct feasibility studies to identify suitable locations and would likely require public funding partner.

# Alternative Energy

- The global wind energy market is projected to grow from $8 billion to $47 billion in next 10 years, with major investment in offshore facilities.
- Massachusetts Technology Collaborative, GE, and U.S. DOE formed Organizing Group to discuss and create guidelines for an offshore wind collaborative off the Northeast coast.
- In early 2009, Massachusetts Renewable Energy Trust commissioned a Port and Support Infrastructure Analysis for Offshore Energy Development. Gloucester may be identified as suitable site for supporting offshore energy development.
- The draft Massachusetts Ocean Management Plan identifies two provisional sites for commercial-scale wind energy production in coastal waters near Gloucester. Gloucester's full service port would make it a likely base for constructing, operating, and repairing wind energy facilities.

# Frozen Fish Processing

- Frozen fish processing — primarily a remnant of an era when processors obtained most of their fish through the local commercial fishing industry.
- Gorton's and Good Harbor Fillet plan to stay in Gloucester, but other firms unlikely to locate here unless harvesting of species used in frozen fish production increases.
- Gorton's and Good Harbor Fillet report difficulties recruiting a suitable workforce -- professional and production.
- May be potential for companies to develop niche products used in production by the frozen fish industry (e.g., Proteus Industries).

# Fish Processing Technology

- While Gloucester's fishing industry spawned design and manufacture of fish processing equipment in the past, little such activity is left in Gloucester today.
- One company, Pearce Processing Systems, designs and manufactures portion-control cutting, pressing, and conveying equipment. While headquartered in Gloucester, manufacturing operations are elsewhere.

## Marine Equipment Production

- Few companies that produce equipment for commercial and leisure vessels remain in Gloucester.
- ITT Flojet, manufacturer of marine water pumps for small and medium-sized leisure vessels, is planning to close its production facility and move it to Mexico.

## Maritime Transportation

- While there have been recent efforts to develop ferry services in Gloucester (e.g., to Nova Scotia), past efforts have been unsuccessful and future prospects remain uncertain.
- Commuter ferry service to Boston is unlikely because of high subsidy costs, variable weather conditions, and relatively long commuting times.
- Presence of a competing commuter rail service further reduces the likelihood of Gloucester as a commuter ferry location.

# Coastal Protection and Restoration

- Traditional erosion processes along NE coastline likely to accelerate from climate change, requiring increased development of engineering and construction services for coastline protection projects.
- Northeast Region Implementation Team, charged with improving coastal habitats to resist erosion, not currently looking for harbor sites as staging areas for dredging and restoration projects.
- As impacts of climate change become more severe, need for port staging areas for restoration projects likely to increase.

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- Gloucester's quality of life, proximity to the water and relatively low cost can be important draw for "lifestyle" entrepreneurs.
- Gloucester Harbor, with views, mix of activities, and downtown proximity, can be a particularly attractive location.
- Can qualify as a supporting use within Designated Port Area.
- Increased space may be available if supporting-use is increased from maximum of 25% to 50% of total property square footage, as recommended in current Harbor Plan.
- Development of additional amenities would help to attract companies. Another important issue is improving broadband internet service.

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Overview

Marine Research

Marine and Maritime Education

Marine and Maritime Industries

Small Technology-based, Professional, and Creative Enterprises

**Discussion Questions**

# Discussion Questions

1. What opportunities do maritime and marine industries present for Gloucester residents and businesses?
2. What are the implications for:
   - The city's economy?
   - The city's quality of life?
   - The city's competitiveness?
3. What does it mean for the way we define and characterize our economy? Do we need to think differently about our economic engines/anchors?
4. What does it mean for how and where we invest in our economic future?

# Comments

We welcome your comments

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